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| 10/501,158 | 07/12/2004 | Philippe Thurot | 0510-1219 | 5346 |
| 465 7590 06/23/2009 YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314 | | | EXAMINER BOWERS, NATHAN ANDREW | |
| | | | ART UNIT 1797 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/501,158

Applicant(s)

THUROT, PHILIPPE

Examiner

NATHAN A. BOWERS

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Drawings

The drawings were received on 11 June 2009. These drawings are acceptable. No new matter is added through submission of these replacement drawings because the replacement Figures 1-4 correspond to Figures 1-4 of priority application PCT/FR02/00039 published as WO 03/068709.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Claims 1 and 9 include the limitation "smooth sampling rod," however this feature is not presented in Applicant's original specification. Applicant points to Figure 4 as support, stating that since the rod is not perforated, it is smooth. However, Figure 4 simply suggests that the majority of the sampling rod surface does not include intake strainer holes. The Figure discloses nothing with regard to whether the surface of the sampling rod is smooth or rough. Even though the illustrated sampling tube is not perforated, it is still very possible that the sampling tube

includes rough surfaces. The Figures and specification are absent any teachings regarding the texture of the sampling tube surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 1) Claims 1, 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider (US 4670148) in view of Katz (US 4838733) and Yao (US 6541073).

With respect to claims 1, Schneider discloses an optimized system for the regulation and discontinuous measurement of the gas content in composting waste. At least one remote bay (Figure 1:19) contains one or more gas measurement probes (Figure 2:10.1-10.5) that are capable of determining oxygen and carbon dioxide concentration. This is disclosed in column 2, lines 30-58 and in column 3, lines 12-40. Column 5, lines 40-57 state that the operation of a gas intake pump (Figure 1:13) and a

plurality of electric valves (Figure 2:11.1-11.5) is regulated by a program controller (Figure 1:17). A smooth pipe (Figure 1:9.3) connects each of the electric valves to a gas sampling device such that gases at the sampling device are sent to the measurement probes. The oxygen measurement probe is able to supply within a very short response time the measurement of oxygen content in the compost material. As evidenced by the Figures, the sampling device comprises a rod with two opposite ends able to be driven into a pile of compost. Schneider, however, does not expressly disclose that the sampling rods include an air intake strainer.

Katz discloses a system in which air samples are removed from a compost pile using a plurality of sampling device rods (Figure 3:32). The rods are connected to a pump (Figure 1:78) capable of drawing gases through the use of suction. Column 3, lines 9-40 state that each rod includes an air intake strainer (Figure 3:48 and Figure 7:184).

Schneider and Katz are analogous art because they are from the same field of endeavor regarding compost gas removal devices.

At the time of the invention, it would have been obvious to include screens on each of the sampling rods disclosed by Schneider. Katz teaches that it is important to preclude the movement of solid compost chunks into the sampling rods. The use of screens effectively prevents such fouling while still allowing the sampling of gases. Katz teaches that the screens enable the passage of a great volume of gases over a given time, but holds back the solid materials of the landfill.

The combination of Schneider and Katz still differs from Applicant's invention because neither Schneider nor Katz teach the use of zirconium oxide sensors.

Yao discloses a zirconium oxide sensor capable of detecting oxygen levels in a plurality of biochemical applications. Column 1, lines 8-29 state that it is well known in the art to use zirconium oxide in the formation of electrode components within bioreactor oxygen probes.

Schneider and Yao are analogous art because they are from the same field of endeavor regarding oxygen detection sensors.

At the time of the invention, it would have been obvious to utilize the oxygen sensors disclosed by Yao in the system disclosed by Schneider. As evidenced by Yao, zirconium oxide probes are known in the art as effective means capable of monitoring oxygen concentrations within a gas stream. It would have been apparent to equip the system of Schneider with any oxygen sensor, including zirconia sensors, that are capable of effectively determining relative concentrations in real time.

With respect to claim 2, Schneider, Katz and Yao disclose the apparatus set forth in claim 1 as set forth in the 35 U.S.C. 103 rejection above. In addition, Schneider clearly teaches that the electric values are physically separated from the program controller. Furthermore, the operation of the valves is regulated using the program controller.

With respect to claim 12, Schneider, Katz and Yao disclose the apparatus set forth in claim 1. Katz additionally states that the end of the sample tube is rounded. See Figure 6. The rounded end of the Katz sample tube is considered to be tapered because it gradually becomes narrower toward the end. Rounded ends are inherently tapered because the thickness of the tube decreases steadily along the rounded section of the end.

2) Claims 3, 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider (US 4670148) in view of Katz (US 4838733) and Yao (US 6541073) as applied to claims 1 and 2, and further in view of Noble (US 4442974).

With respect to claims 3 and 8, Schneider, Katz disclose and Yao the apparatus set forth in claims 1 and 2 as set forth in the 35 U.S.C. 103 rejections above. Additionally, Katz clearly teaches that the sampling rods are connected to the pipe using a coupling (Figure 4:160) facilitating the fastening and insertion of the pipe. This is described in column 5, lines 47-64. Schneider and Katz, however, do not expressly teach that this coupling includes a packing gland.

Noble discloses a land irrigation system comprising a system of pipes capable of moving a fluid from a main line (Figure 1:33) out through a sprinkler line (Figure 1:25). The system of pipes is complex and requires many couplings to facilitate the fastening of individual pipes to one another. Noble teaches in column 6, lines 13-33 and column 7, line 67 to column 8, line 51 that packing glands are used to form couplings.

Schneider and Noble are analogous art because they are directed toward the same field of endeavor regarding the forming of pipe connections.

At the time of the invention, it would have been obvious to utilize packing glands in forming the connection between the pipe disclosed by Schneider to each individual rod. Noble teaches that packing glands are beneficial because they serve to reduce leakage while allowing for rotation of the pipes while connected. It would have required only minor alterations to the Schneider reference in order to utilize packing glands at the junction between the pipe and each rod.

With respect to claim 4, Schneider, Katz, Yao and Noble disclose the apparatus set forth in claim 3 as set forth in the 35 U.S.C. 103 rejection above. In addition, Schneider teaches that a single gas measurement probe can be used to monitor oxygen or carbon dioxide content of gas delivered from each of the plurality of sampling rods.

3) Claims 5, 6, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider (US 4670148) in view of Katz (US 4838733), Yao (US 6541073) and Noble (US 4442974), and further in view of Johnson (US 4026355).

Schneider, Katz, Yao and Noble disclose the combination as described in the 35 U.S.C. 103 rejections above. Schneider, however, does not expressly state that temperature is measured using at least one temperature probe.

Johnson discloses a method for testing and monitoring landfill gas comprising a plurality of rods (Figure 5:85) each capable of withdrawing a sample from the interior of a compost pile. Column 7, lines 21-33 further state that temperature probes are used to measure heat accumulation within the compost piles.

Schneider and Johnson are analogous art because they are from the same field of endeavor regarding compost gas monitoring devices.

At the time of the invention, it would have been obvious not only to provide oxygen concentration monitoring probes within the apparatus of Schneider, but also temperature monitoring probes as well. It is known in the art that temperature is a good indicator of microbial activity within a compost system. Furthermore, temperature readings can be used to anticipate undesirable pressure build-ups within the waste pile.

4) Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider (US 4670148) in view of Katz (US 4838733), Yao (US 6541073), Noble (US 4442974) and Johnson (US 4026355) as applied to claims 6 and 9, and further in view of Jackson (US 20020023505).

Schneider, Katz, Yao, Noble and Johnson disclose the apparatus set forth in claims 6 and 9, however do not expressly disclose the use of a rotameter.

Jackson discloses a system for removing air from the ground. Jackson teaches that a sampling rod (Figure 1:10) comprising a plurality of openings (Figure 1:12) is inserted into a subsurface region (Figure 1:13) so that air is removed from the subsurface for processing. This is disclosed in paragraph [0027]. Paragraphs [0031]

and [0032] state that a rotameter is used to measure the rate of air flow through the sampling rod.

Schneider and Jackson are analogous art because they are from the same field of endeavor regarding subsurface air sampling devices.

At the time of the invention, it would have been obvious to include a rotameter device in the apparatus of Schneider. Jackson teaches that rotameters are desirable because they are well known in the art as effective flow rate measuring devices. Rotameters exhibit the additional advantage of forming a tight seal with a valve seat, thereby preventing air flow in a reverse direction. See Figure 4 and paragraph [0031].

Response to Arguments

Applicant's arguments filed 14 April 2009 with respect to the 35 U.S.C. 112 rejections involving claims 9-11 have been fully considered and are persuasive. These rejections have been withdrawn in light of the newly submitted Figures.

Applicant's arguments filed 14 April 2009 with regard to the rejections involving the combination of Schneider, Katz and Yao have been fully considered but they are not persuasive.

Applicant's principle arguments are

(a) The perforated tube of Katz is unsuitable for the sampling required of the present invention. The draw tube of Katz is engineered to outgas a large volume of

waste, and this is incompatible with the rapid measurement of oxygen content of several swaths.

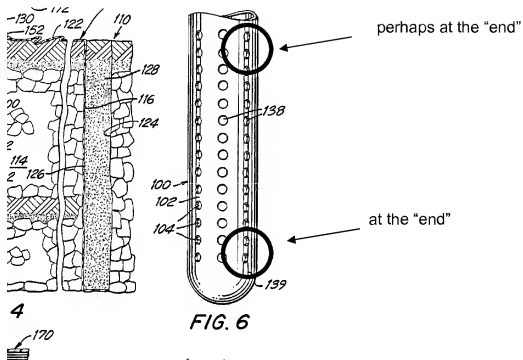
In response, please consider the following remarks.

Applicant has not provided any evidence suggesting that a draw tube engineered to outgas a large volume of waste would prove ineffective at monitoring the oxygen content of several swaths. Quite the opposite, draw tubes capable of removing large volumes of gas would provide a better indication of oxygen content within the processing waste by allowing for a larger sample size that is likely a better representation of the total gas within the waste. Indeed, Katz expressly teaches in column 2, lines 30-58 and in column 3, lines 12-40 that at least one remote bay (Figure 1:19) contains one or more gas measurement probes (Figure 2:10.1-10.5) that are capable of determining oxygen and carbon dioxide concentration.

(b) The Katz reference does not disclose an intake strainer at the end of each rod. The "end" of the Katz rod cannot be construed as including the lowermost strainers adjacent to the cap.

In response, please consider the following remarks.

Although it is agreed that Katz does not disclose air intake orifices on the rounded cap of the rod, the "end" of the rod is considered to extend an arbitrary distance along cylindrical sidewall of the rod from the rounded cap. The air intake strainers located immediately adjacent to the rounded cap are certainly located at the "end" of the rod.



The fact that Katz does disclose the use of air intake orifices all along the sidewalls of each rod does not mean that at least some of the orifices are located at the end of the rod.

Applicant's definition of "end" as "either extremity of something that has length" does not necessarily exclude surfaces along the sidewalls of the rod near the rod tip so long as they are adequately close to the tip. It is entirely possible that a feature (in this case a strainer) might be "adjacent" to the rod tip and still be considered at the "end" of the rod.

(c) Katz does not disclose a smooth sampling rod.

In response, please consider the following remarks.

Schneider already discloses the use of smooth sampling rods. Katz is merely relied upon as evidence that it would have been obvious to fit air intake strainers at one end of the smooth sampling rods disclosed by Schneider.

(d) There is no teaching in Yao of heating a zirconium oxide sensor in order to reduce response time.

In response, please consider the following remarks.

Yao discloses that zirconium oxide sensors are well known in the art as effective means capable of monitoring oxygen concentrations within a gas stream. Additional limitations regarding heating constitute an *intended use* that does not alter the structure of the claimed apparatus.

In response to applicant's argument that Yao does not disclose heating a zirconium oxide sensor, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In the instant case, the zirconium oxide sensor of Yao is fully capable of being heated.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan A. Bowers whose telephone number is (571) 272-8613. The examiner can normally be reached on Monday-Friday 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William H. Beisner/
Primary Examiner, Art Unit 1797

/Nathan A Bowers/
Examiner, Art Unit 1797